

REMARKS

The present Amendment amends claims 1-7 and cancels claims 8 and 9. Therefore, the present application has pending claims 1-7.

Applicants hereby submit that the claim of priority on May 5, 2004 allegedly claiming priority with respect to Japanese Patent Application No. 2003-393647 was in error and should be disregarded. Claim of priority was appropriate and is correct with respect to the claim priority submitted on February 3, 2004 along with the present application. The February 3, 2004 claim of priority claimed priority based on Japanese Patent Application No. 2003-3337239.

In response to the restriction requirement Applicants hereby confirm their election without traverse of Invention Group I, claims 1-7 for further prosecution on the merits. Accordingly, the Office Action examining claims 1-7 was appropriate.

However, Applicants hereby reserve their rights to pursue the invention as set forth in the non-elected and canceled claims 8 and 9 in a Divisional Application.

The Abstract stands objected to as not being limited to a single paragraph. Amendments were made to the abstract to cause it to be a single paragraph. Therefore this objection is overcome and should be withdrawn.

In paragraph 11 of the Office Action the Examiner objected to the drawings as allegedly not complying with the requirements of 37 CFR §1.83(a). Particularly the Examiner objects that the drawings do not illustrate the features recited in claim 3. This objection is traversed being that claim 3 was amended and the features now recited therein are disclosed in the

specification the same as the features as originally recited in claim 3. The claims now recite that the intermediate logical device is constructed by arranging at least one level of first memory, and at least one level of second memory hierarchically arranged at a level above the at least one level of first memory. Fig. 2 of the present application clearly illustrate that the intermediate logical device 101 is made up of a plurality of memory layers 42A-D layered on top of one another, thereby providing the hierarchical structure. Therefore reconsideration and withdrawal of this rejection is respectfully requested.

Claim 1 stands objected to due to informalities noted by the Examiner in paragraph 12 of the Office Action. Amendments were made to claim 1 to correct the informalities noted by the Examiner. Therefore, this objection is overcome and should be withdrawn.

Claims 1-3 and 5 stand rejected under 35 USC §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regards as their invention. Various amendments were made throughout claims 1-3 and 5 to bring it into conformity with the requirements of 35 USC §112, second paragraph. Therefore, Applicants submit that this rejection is overcome and should be withdrawn.

Specifically, amendments were made to claims 1-3 and 5 to overcome the objections noted by the Examiner in paragraphs 13-15 of the Office Action.

The Examiner's cooperation is respectfully requested to contact Applicants' Attorney by telephone should any further indefinite matter be discovered so that appropriate amendments may be made.

Claims 1, 2, 6 and 7 stand rejected under 35 USC §102(e) as being anticipated by Voigt (U.S. Patent No. 6,684,313); and claims 3 and 4 stand rejected under 35 USC §103(a) as being unpatentable over Voigt in view of Chai (U.S. Patent No. 5,504,882). These rejections are traversed for the following reasons. Applicants submit that the features of the present invention as now more clearly recited in claims 1-4, 6 and 7 are not taught or suggested by Voigt or Chai whether taken individually or in combination with each other as suggested by the Examiner. Therefore, Applicants respectfully request the Examiner to reconsider and withdraw these rejections.

Amendments were made to the claims to more clearly describe features of the present invention. Particularly, amendments were made to the claims to more clearly recite that the present invention is directed to a system having a first controller of a virtualization system and a second controller of a disk array system, wherein the second controller is coupled to the first controller. The system according to the present invention performs data processing according to a request from a host device,

As per the present invention the first controller has mapping information which indicates relations between at least one first logical unit accessed by the host device and at least one intermediate logical device. The intermediate logical device is related to a second logical unit of the second controller by a virtualization function of said first controller. The first logical

unit is related to a first logical unit number (LUN) and the second logical unit is related to a second LUN.

The above described features of the present invention as now more clearly recited in the claims are not taught or suggested by any of the references of record whether taken individually or in combination with each other. Particularly, the above described features of the present invention are as now more clearly recited in the claims are not taught or suggested by Voigt or Chai whether taken individually or in combination with each other as suggested by the Examiner.

Voigt teaches an automated process of assigning storage resources to logical units (LUs) in a manner to avoid contention for such resources. Voigt discloses a process having automatic aspects of assigning physical storage resources to the LUs responsive to the LU logical groupings and responsive to the logical groups in a manner such that the LUs in one logical group cannot contend for physical storage resources with the LUs in another group, but the LUs in a single group may contend with one another. As per Fig. 1 and 8 of Voigt one LU is assigned to plural physical devices.

However, at no point in Voigt that information is set therein which allows for plural levels of logical units to be related to each other in a hierarchical manner as recited in the claims. As clearly recited in the claims mapping information is provided that indicates relations between at least one first logical unit, included in a first controller accessible by the host device, and at least one intermediate logical device, wherein the intermediate logical device is related to a second logical unit of a second controller by a virtualization function of said first controller. Such multiple hierarchical type

relations between logical units across multiple storage systems are clearly not taught or suggested by Voigt.

Thus, Voigt fails to teach or suggest a system having a first controller of a virtualization system and a second controller of a disk array system, wherein the second controller is coupled to the first controller and the system performs data processing according to a request from a host device as recited in the claims.

Further, Voigt fails to teach or suggest that the first controller has mapping information which indicates relations between at least one first logical unit accessed by the host device and at least one intermediate logical device, wherein the intermediate logical device is related to a second logical unit of the second controller by a virtualization function of said first controller as recited in the claims.

Still further, Voigt fails to teach or suggest that the first logical unit is related to a first logical unit number (LUN) and the second logical unit is related to a second LUN as recited in the claims.

Therefore, Voigt fails to teach or suggest the features of the present invention as recited in claims 1, 2, 6 and 7. Accordingly, reconsideration and withdrawal of the 35 USC §102(e) rejection of claims 1, 2, 6 and 7 as being anticipated by Voigt is respectfully requested.

The above described deficiencies of Voigt are not supplied by any of the other references of record whether taken individually or in combination with each other. Particularly, the above described features of the present invention are not taught or suggested by Chai.

In the Office Action the Examiner merely relies upon Chai for an alleged teaching of the intermediate memory hierarchy. However, no such teaching can be found in Chai. Chai simply teaches, contrary to that alleged by the Examiner, the hierarchical structuring of RAID controllers as illustrated in Figs. 4 and 5 thereof. There is absolutely no teaching or suggestion in Chai that information is set therein which allows for plural levels of logical units to be related to each other in a hierarchical manner as recited in the claims. Further, there is no teaching or suggestion in Chai that mapping information is provided that indicates relations between at least one first logical unit, included in a first controller accessible by the host device, and at least one intermediate logical device, wherein the intermediate logical device is related to a second logical unit of a second controller by a virtualization function of the first controller as recited in the claims.

Thus, Chai fails to teach or suggest a system having a first controller of a virtualization system and a second controller of a disk array system, wherein the second controller is coupled to the first controller and the system performs data processing according to a request from a host device as recited in the claims.

Further, Chai fails to teach or suggest that the first controller has mapping information which indicates relations between at least one first logical unit accessed by the host device and at least one intermediate logical device, wherein the intermediate logical device is related to a second logical unit of the second controller by a virtualization function of said first controller as recited in the claims.

Still further, Chai fails to teach or suggest that the first logical unit is related to a first logical unit number (LUN) and the second logical unit is related to a second LUN as recited in the claims.

Therefore, both Voigt and Chai fail to teach or suggest the features of the present invention as now more clearly recited in the claims. Since both Voigt and Chai suffer from the same deficiencies relative to the features of the present invention as now more clearly recited in the claims, combining Voigt and Chai in the manner suggested by the Examiner in the Office Action still fails to teach or suggest the features of the present invention as now more clearly recited in the claims. Accordingly, reconsideration and withdrawal of the 35 USC §103(a) rejection of claims 3 and 4 as being unpatentable over Voigt in view of Chai is respectfully requested.

Applicants acknowledge the Examiner's indication in paragraph 18 of the Office Action that claim 5 would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. Amendments were made to claim 5 to place it in independent form including all the limitations of the base claim and any intervening claims. Therefore, claim 5 is allowable as indicated by the Examiner.

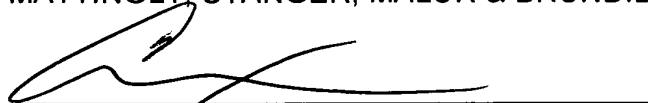
The remaining references of record have been studied. Applicants submit that they do not supply any of the deficiencies noted above with respect to the references utilized in the rejection of claims 1-7.

In view of the foregoing amendments and remarks, applicants submit that claims 1-7 are in condition for allowance. Accordingly, early allowance of claims 1-7 is respectfully requested.

To the extent necessary, the applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C., Deposit Account No. 50-1417 (1309.43490X00).

Respectfully submitted,

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